National Institute of Environmental Health Sciences

Altitude and environmental climate effects on bronchiolitis severity among children presenting to the emergency department

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Abstract:

Bronchiolitis, a respiratory illness, is the leading cause of hospitalization for infants. The authors examined whether environmental factors contributed to the severity of the bronchiolitis illness. They compiled environmental data (temperature, dew point, wind speed, precipitation, altitude, and barometric pressure) to augment clinical data from a 30-center prospective cohort study of emergency department patients with bronchiolitis. They analyzed these data using multivariable logistic regression. Higher altitude was modestly associated with increased retractions (odds ratio [OR] Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 1.6; 95% confidence interval [CI] Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 1.1-2.1; p < .001) and decreased air entry (OR Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 2.0; 95% CI Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 1.6-2.6; p < .001). Increasing wind speed had a minor association with more severe retractions (OR Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 1.3; 95% CI Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 1.1-1.7; p Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) .02). Higher dew points had a minor association with lower admission rates (OR Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.9; 95% CI Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.8-0.996; p Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) .04). Altitude and environmental climate variables appear to have modest associations with the severity of bronchiolitis in the emergency department. Further studies need to be conducted, however, on limiting exposure to these environmental variables or increasing humidity before making broad recommendations.

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Meteorological Factors, Meteorological Factors, Precipitation, Temperature, Other Exposure

Other Exposure: dew point

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

United States

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Respiratory Effect

Respiratory Effect: Other Respiratory Effect

Respiratory Condition (other) : bronchiolitis

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified